

REMARKS

The Examiner is thanked for the Office Action of March 30, 2007. This request for reconsideration is intended to be fully responsive thereto.

AMENDMENTS TO CLAIMS

Claims 2-5, 7, and 9-11 were cancelled. Claims 1, 6, 8, and 12 were amended to mainly to respond to the Examiner's rejection and to clarify the invention. These amendments to Claims 1 and 6 are fully explained and supported in FIGS. 2 and 3 and also the description of FIGS. 2 and 3 in the current specification, i.e., [0104], [0113], [0155], [0191], [0192], and [0193]. These amendments to Claims 8 and 12 are fully explained and supported in FIGS. 10-13 and also the description in the current specification, i.e., [0115]-[0118] and [0196]-[0199]. No new matter has been added.

REJECTIONS UNDER 35 U.S.C. 101

Claims 1, 4, 6, 8, and 11-12 were rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Examiner suggested that these claims fails to be claimed in conjunction with a computer readable medium and that the title, i.e., "DATABASE ACCELERATOR", is interpreted as being implemented by software.

Claims 4 and 11 were canceled and Claims 1, 6, 8, and 11 were amended to comply with the Examiner's suggestion. Titles of these claims reads "computer readable medium containing a database accelerator". Therefore, the Applicant believes that the rejections under 35 U.S.C. 101 were removed.

REJECTIONS UNDER 35 U.S.C. 102 (b) BY LIN M. HUEI

Claims 1-2 and 4-7 were rejected under 35 U.S.C. 102 (b) as being anticipated by US5544357 to Lin M. Huei (hereinafter, Huei). Regarding Claim 1 of the present invention, the Examiner suggested that Huei teaches a method/system, comprising: a primary system (col. 4, lines 41-47) and an accelerator (col. 4, lines 52-57), which is equivalent to the invention described in Claim 1. The Examiner rejected Claims 2, 4, 5, and 7; however, these claims were canceled by the Applicant, and therefore the rejections to Claims 2, 4, 5, and 7 under 35 U.S.C. 102 (b) are now moot. Regarding Claim 6, the Examiner suggested that Huei teaches a method/system, comprising: a primary system (col. 4, lines 41-47), an accelerator system (col. 4, lines 52-57), and means of accelerator system access (col. 4, lines 66-67). The Applicant respectfully disagrees.

Firstly, Claim 1 was amended to read:

"A computer readable medium containing a
database accelerator, comprising: a primary
system that holds data records having data
items including primary keys, primary blocks
that store the data records in the order of their
primary keys, and a location table that contains
in a contiguous region location table entries
containing the addresses of the primary blocks;

a frond location table having frond location table
entries in a contiguous region indicating the
blocks identical to the location table entries of

each primary block; and

an accelerator system the frond location table
entries are updated synchronously or
asynchronously according to the updated
information issued by the primary system when
the location table entry of the primary blocks is
updated.”

Second, Claim 6 was amended to read:

“The computer readable medium according to
Claim 1, wherein

a primary key performs a binary search on the
frond location table and accesses blocks on the
primary system based on results indicated by
frond location table entries.”

As explained above, Claims 1 and 6 were amended to further distinguish from Huei and to clarify the content. Huei does not disclose or teach such limitation. Therefore, the amended Claims 1 and 6 should overcome the Examiner's rejection under 35 U.S.C. 102 (b) with respect to Huei. Additional distinctions are explained below.

In the present invention, the accelerator copies multiple location tables of the

primary system to place the same in multiple accelerators, so that the frond location table may have a block address. On the other hand, the table of Huei has the record address but is without the block addresses. Also in conventional databases, theoretically it seems possible to locate index copies on the multiple accelerators but in an actual practice it is not possible. It is because the index is tied to the data record and at each change in the data record (e.g., addition of the record, changes in its contents or deletion of the record), the index is changed, posing a heavy load on index maintenance. Therefore, it is not at all realistic to copy and maintain such indices.

In the present invention, the location table is tied to the block, not to individual records. Thus, even when the records are changed, the location table is rarely changed, minimizing the burden on the maintenance of the location table. Even when there are multiple copies for location tables, the burden does not increase. The present invention is basically built on the theory that the burden on the database is not from the addition or changes in the records themselves; rather it is far greater in the search and maintenance of indices. Specifically, by dispersing the index search activities (a search by location table) over multiple accelerators that pose a heavy burden to the system, rapid record search and record operation become possible. Due to this structural difference, the current invention differs from that by Huei in the effects of accelerator action: these two inventions differ in their purposes, organizations or effects. The present invention is not readily conceived from the invention by Huei.

REJECTIONS UNDER 35 U.S.C. 102 (b) BY TAMATSU

Claims 8 and 11-12 were rejected under 35 U.S.C. 102 (b) as being anticipated by US Patent Publication No. 2001/0011321 A1 to Tamatsu (hereinafter, Tamatsui). Regarding Claim 8 of the present invention, the Examiner suggested that Tamatsu

teaches a method/system, comprising: a primary system (para. 43, lines 1-12) and an accelerator system (para. 53, lines 1-6). Claim 11 was canceled in this action, and therefore the rejection of Claim 11 is now moot. Regarding Claim 12, the Examiner suggested that Tamatsu teaches a method/system, comprising: a primary system (para 8, lines 6-8) and an accelerator system (para. 49, lines 1-5). The Applicant respectfully disagrees.

Claim 8 was amended to read:

“A computer readable medium containing a
database accelerator, comprising:

a primary system that holds data having data items including primary keys and alternate keys, primary blocks that store the data records in the order of their primary keys, alternate-key blocks that stores the alternate-key entries made up of alternate keys and primary keys in the alternate-key value order, and an alternate-key location table that contains the alternate-key location table entry in a contiguous region; and

an accelerator system that holds a frond alternate-key location table that contains the frond alternate-key location table entries indicating alternate-key location table entries of

each alternate-key block and the identical alternate-key block in the contiguous region, where said alternate-key frond location table entries, when the alternate-key location table entry of each alternate-key block is updated, is synchronously or asynchronously updated based on the newly updated information sent from the primary system.”

Claim 12 was amended to read:

“The computer readable medium according to Claim 8,
wherein accelerator system access by the alternate key is performed by the binary search on the frond alternate-key location table and accesses the alternate-key blocks on the primary system based on results indicated by frond alternate-key location table entries.”

As explained above, Claims 8 and 23 were amended to further distinguish from Tamatsu and to clarify the content. Tamatsu does not disclose or teach such limitation. Therefore, the amended Claims 8 and 12 should overcome the Examiner’s rejection under 35 U.S.C. 102 (b) with respect to Tamatsu.

REJECTIONS UNDER 35 U.S.C. 103 (a) BY HUEI AND LEVY

Claim 3 was rejected under 35 U.S.C. 103 (a) as being unpatentable over Huei in view of US Patent Publication No. 2003/0158842 to Levy et al (hereinafter, Levy). Regarding Claim 3 of the present invention, the Examiner suggested that Levy teaches a system/method, primary system and the accelerator system sharing multiple CPUs (para. 109, lines 9-12) which is not shown by Huei. Also, Claims 9 and 10 were rejected under 35 U.S.C. 103 (a) as being unpatentable over Huei in view of Levy. Regarding Claims 9, the Examiner suggested that Levy teaches a system/method, comprising the primary system equipped with at least one CPU (para. 45, lines 5-8) and the accelerator system equipped with at least one CPU (para. 106, lines 2-7) which is not shown in Tamatsu. Regarding Claim 10, the Examiner suggested that Levy teaches a system/method, comprising the primary system and the accelerator system sharing multiple CPUs (para. 109, lines 9-12) which is not shown in Tamatsu. However, Claims 3, 9, and 10 were canceled, and therefore the rejection of these claims are now in moot.

Also, in the present invention, as stated above, the accelerator copies multiple location tables of the primary system to place the same in multiple accelerators, so that the frond location table may have a block address. In Levy, the accelerator is designed based on the theory that the data that have been used recently are likely to be used often, and therefore the accelerator by Levy et al. is not equipped with a frond location table having addresses of the blocks. From these differences, Levy should not be the reference to reject the present invention.

CONCLUSION

It is respectfully submitted Claims 1, 6, 8, and 12 are now in condition for

allowance and notice to that effect is respectfully requested. Should the Examiner believe further discussion regarding the above claim language would expedite prosecution they are invited to contact the undersigned at the number listed below.

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